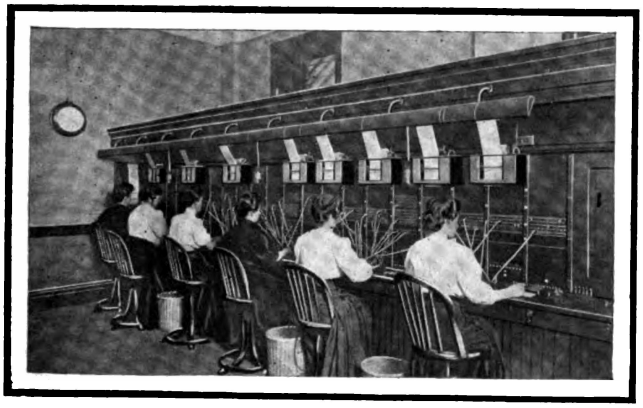
Telephony in the Hotel Astor, New York

By S. R. Edwards.

The New York Electrical Society, through the courtesy of Mr. Frederick A. Muschenheim, held the last meeting of the season at the Hotel Astor. Mr. Muschenheim delivered a very interesting talk on the uses which are made of electricity in the modern hotels. In the Hotel Astor motors are used for more different purposes and in greater numbers than any similar building in the world. Mr. Muschenheim told how electricity was used in the steam-generating plant for the driving of pumps, in the water supply plant, in the refrigerating plant, the heating and ventilating plant, the kitchen and various shops connected with the hotel. Electricity is also used for the fire-alarm system, the watchman's service system, the mail delivery, clock system and in many other devices for insuring the safety and comfort of the guests.

At the conclusion of the lecture, the members of the society were conducted to the telephone exchange on the second floor. All the apparatus connected with the telephone system is installed in one large room making it very convenient for operation purposes. In this room, in addition to the switchboard, the chief operator's desk and the wire chief's desk, are the storage batteries and power equipment, the main frame, relay rack, condenser and repeating coil rack, together with the power board and fuse panel.

The switchboard is a six position, common battery, bridging multiple type board of three sections. The first two positions are used for handling incoming trunk calls and are equipped with 15 pairs of steel cords. The other four positions are used for outgoing and interior calls and are equipped with 15 pairs of steel cords and two pairs of copper conductor cords for long distance calls. Each position on the switchboard is equipped with a telautograph machine which is plainly shown in the accompanying photograph. On account of the telautograph there are but two operators' positions to a section instead of three as is usually the case in this type of board. At the present time the board, which has an ultimate capacity of 1200 lines, is equipped with 60 trunk lines and 700 subscribers' lines, of which 550 are connected to the guests' rooms, and the remaining lines are used for communication between the various departments



The Six-Position Multiple Switchboard in Hotel Astor, New York.

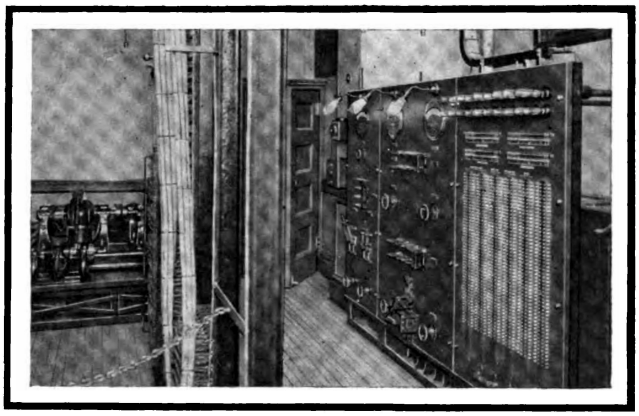
of the hotel. The room numbers appear on the switchboard in their regular positions and this greatly facilitates the service given the guests.

The end position of the board is not equipped for service, but contains keys for the supply of ringing current from the central office to each operator's position in case the local service should be interrupted. There are also five cords in this position which are used for connecting lines in trouble with the wire chief's desk and also for testing purposes.

When a call comes in on one of the trunk lines, the lamp under the trunk jack is illuminated and what is known as a "visual busy signal" is displayed on each position, thus indicating to the different operators that a certain trunk line is in use.

The lighting of the face of the switchboard is satisfactorily taken care of by placing 4-cp lamps spaced about 2 ft. apart and placed in a reflector trough which is hung out about 2 ft. near the top of the switchboard.

The chief operator's desk is of a standard type, having lines



A Corner in the Hotel Astor Telephone Exchange, Showing Part of Power Equipment, Power and Fuse Panels and Section of Relay Rack in the Foreground.

to each operator's position. The wire chief's desk, as shown in the photograph, is of a type in common use in small exchanges.

The main frame consists of central supporting uprights for cross bars. It is 9 ft. high, 2½ ft. deep and 4½ ft. wide. The wires from the central office terminate on the vertical side of this frame and are cross-connected to the horizontal side. From the terminals on the horizontal side, cables are run to the multiple jacks, to the answering jacks and to the signaling circuit, which includes a 50-ohm cut-off relay and a line lamp without the usual line relay. The line relay is omitted because the distance from the subscribers' stations to the exchange is so short that it was not considered necessary. The intermediate frame was omitted as the requirements did not make it necessary to change the operators' loads or vary the line assignments.

A departure is made from the usual practice in regard to the supervisory lamp as the circuit is opened by the supervisory relay instead of being placed in shunt. The relay rack, which contains the cut-off and other relays, is made of small I-beams and is 9 ft. high by 8½ ft. wide and 7 in. deep. The condenser and repeating coil rack is made of angle iron 2 in. x 2 in. x ¼ in. and is 9 ft. high, 4 ft. wide and 10 in. deep. The bars for supporting the coils and condensers are placed 4½ in. apart.

The ringing power equipment consists of two dynamotors with a voltage of 240 on the primary and 75 volts on the secondary, a speed of 950 r.p.m. and a current of 1 amp on the secondary. These dynamotors are used alternately every 24 hours.

The charging equipment consists of one 3-hp, 240-volt, 1750 r.p.m. motor direct connected to a 30-volt, 50-amp, 1750-r.p.m. generator, and one 3½-hp, 240-volt, 1950-r.p.m. motor direct connected to a 3-hp, 25-volt, 85-amp, 1950-r.p.m. generator. The storage battery consists of 11 cells of Type F, nine plate, made by the Electric Storage Battery Company. The power board is made up of two slate panels. Upon the first panel is a Weston voltmeter, together with a switch for throwing it across each cell of the storage battery or across the entire battery. The voltage of the battery charging generators can also be obtained on this voltmeter. Switches and rheostats for ringing machines are also placed on this panel. At the top of the second panel of

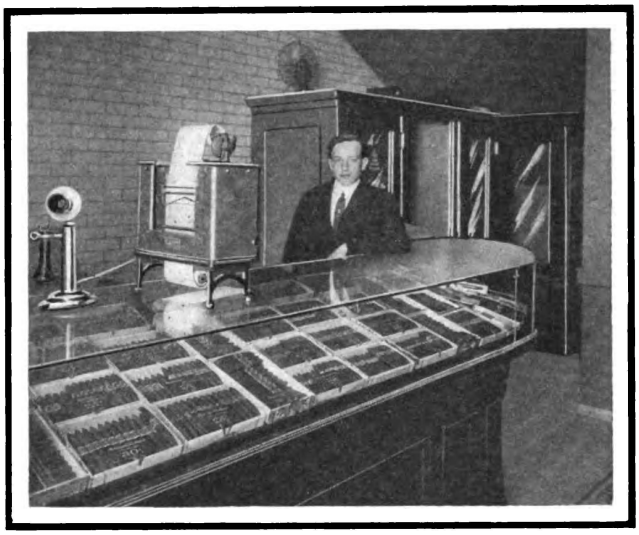
the board are two ammeters, one of which indicates the rate of discharge and the other the rate of charging of the storage battery. The switches for cutting the charging generator sets in or out are also located on this board, as is an overload and underload circuit-breaker, which is placed in the charging circuit of the battery.

The fuse panel, which is placed at the end of the two power panels, carries fuses for the cord circuits, line lamp leads, trunk circuits and other miscellaneous fuses used in connection with the exchange. Upon the top of this panel are mounted resistance lamps which are placed in the generator ringing circuit to equalize the ringing load distribution on the various switchboard positions. Immediately below the lamps are the fuses which protect the emergency ringing circuit from the central office. All the fuses on this panel are placed in shunt with drops which are mounted on the relay rack. When a fuse is blown, a battery current is shunted through the drop, the shutter of the drop is operated and an alarm bell is sounded. The face plate on each drop carries two figures indicating the number of the strip and the position of the fuse, so that by referring to the drop which has been operated, the blown fuse can be very readily located.

As previously mentioned, each position on the board is equipped with a telautograph transmitter, which is mounted on the keyboard, and with a pilot receiver which reproduces all the writing done on that particular position.

By means of keys, messages may be transmitted by the operator over the telautograph to the various departments interested in the service which is called for by guests. For instance, if a guest calls for stationery, ice water or daily papers, the order is written by the telephone operator in her telautograph transmitter and simultaneously recorded at the service boys' station on that particular guest's floor, and the message is also recorded on the telautograph in the main service room on the ground floor. A service boy fills the order, goes back to the station and writes on the telautograph transmitter that he has filled the order. This O. K. is recorded on the telautograph in the service room on the ground floor and also on the telautograph on the switchboard. There are, therefore, three records of the order, one held by the telephone operator, one by the captain of the hall boys and one by the hall boy who fills the order. If a guest should desire his breakfast served in his room, the order which he gives the telephone operator would be recorded by telautograph in the kitchen, as well as at the service station on that particular floor. If a person calls up one of the guests at the hotel by telephone, the telephone operator writes the name of the guest on the telautograph and this is duplicated at the "information clerk's" desk. The clerk obtains the room number or any instructions the guest may have left from an index book and writes the answer back to the telephone operator. In case a guest should not be in his room, the telephone operator would send a telautograph message to the office to page the guest through the house, and this message would be torn off the telautograph and delivered to the page. If a guest is not found, a message would be left in his mail box to inform him on his return. A perfect record of the transaction from the start to the finish is thus obtained, and in case of error, the blame can be instantly placed. The guests can always be satisfied that the management of the hotel have done their duty, as the telautograph record is always available and shows what effort was made to locate the guest when the call came in and also what disposition was made of it.

The Wire Chief's Desk and Part of the Power Panels.

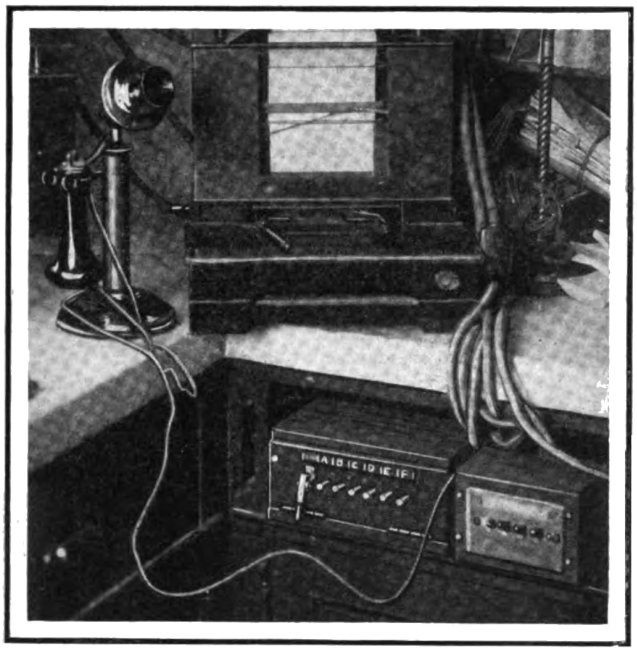


The Grill Room Telephone Pay Stations, Showing Telautograph, by Means of Which the Clerk is Advised of the Amount Due for a Call.

The information clerk is also provided with a telephone so that if he does not understand the message given him by the telautograph he can get into communication with the operator. For this purpose a special circuit is arranged. A box containing seven keys is placed under the clerk's desk. One key operated by a cam lever throws the clerk's telephone from the regular line onto the special circuit. The remaining six keys are lettered to correspond with the operators' positions and by depressing a certain key the operator desired can be signaled. For instance, should the clerk desire to talk to "B" operator, he would throw the cam and then depress button "B." A green lamp beside the pilot lamp on the "B" operator's position would be illuminated, thus informing the operator that the information clerk wished to talk to her. She would then press a button in the order wire strip of keys, cutting her telephone into the circuit and extinguishing the lamp.

In the basement of the hotel, convenient to the grill room, are located five telephone pay station booths. The lines from these booths are connected direct to the telephone exchange on the second floor. When a person makes a long distance call, connection is made through the switchboard and the operator writes the amount of the charge on the telautograph, sending it to the clerk at the cigar stand, which is located by the booths. When the party comes out of the booth, the clerk tells him exactly the amount which is due for his telephone call. There are also seven pay stations on the main floor, which are handled through a small two-position board designed specially for the purpose. This board is operated independently from the main switchboard, 10 trunks being connected direct to the central office, although there are four tie or connecting trunk lines to the main switchboard.

In the basement, in the engineer's office, is located a 90-line mahogany switchboard. It has three trunk lines to the central office and five tie trunks to the main switchboard. It has 45 extensions connected to it and handles calls from various service departments, thus relieving the main switchboard of a large number of calls. All the elevator cars in the hotel are equipped with telephones connecting with this switchboard. These tele-



Information Clerk's Desk in the Front Office, Showing Desk Telephone and Switch for Connecting Telephone to the Different Operators' Positions. A Part of the Telautograph and Controlling Switch is Also Shown.

phones are used for giving orders to, or communicating with, different departments while a person is going from floor to floor.

There is also a small switchboard known as the monitor's switchboard which is located convenient to a stenographer in an ante-room of the business offices of the hotel. The purpose of this switchboard is to provide means for answering calls to any of the persons in the business offices whether they are in the office or not. When a call comes in, a lamp on the monitor's board indicating the line called, is illuminated and remains so until the call has been answered. In case the lamp is not extinguished within a reasonable time, the stenographer in the ante-room cuts in her telephone by means of a key and takes the call. In case the person called happens to be in one of the other offices, the calling party is requested to hold the line. The stenographer then switches her telephone upon the other line, gets in communication with the party called and delivers the message, taking whatever answer is given and delivering it to the party calling.

In order to obtain an idea of the use of the telephone by the hotel guests, records were kept through the busy months and it was found that there was an average of 3000 outgoing suburban and long distance calls made and 2500 incoming received during one month. The longest outgoing calls were made to Chicago and Cincinnati. The hotel contract with the New York Telephone Company calls for 300,000 outgoing messages per year. The total daily traffic is over 4000 calls, and perhaps 30 per cent of this traffic is carried between the two afternoon hours of from 4 to 6 o'clock. About 200 messages for guests are also recorded daily by the operators. Four operators are usually kept at the board, although during the busy hours in the morning, from 8 to 12 o'clock, and from 5 to 8 o'clock in the afternoon, five operators are used. During the night, from 12 o'clock until 8 o'clock in the morning, but one operator is employed. The operators average eight hours work a day, but are not on duty over six hours at a time.

As is shown by the foregoing, the telephone now plays an important part in the modern hotels, although its usefulness and convenience have been but recently appreciated and recognized by hotel managements. Up to five years ago none of the large transient hotels had telephones in every room, but now it is the exception for a hotel not to have this service, while the ingenious methods worked out and applied by Mr. Muschenheim would appear to be of almost universal application in hotel service.

Purification of Telephone Transmitters

Some recent data on a medical point of controversy is given in the following cable dispatch from London, of June 27: "According to a report by a medical officer from Westminster to this week's *Lancet,* a startling result has been attained from a test to discover whether tuberculosis germs exist in telephone mouthpieces. One of the post office public telephones on the central exchange was wiped around with a swab to remove any existing germs in the mouthpiece, and the contents of the swab used to inoculate two guinea pigs. One guinea pig was killed 23 days after inoculation, and a post-mortem examination showed pronounced signs of tuberculosis. The second guinea pig was killed 27 days after inoculation and showed similar signs of infection, thus proving that the deadly germs of tuberculosis can be transmitted by the public telephones as at present in general use.

"It is added that this proves conclusively that all telephones, whether in public or private use, need to be periodically disin-

The Monitor's Switchboard Used in the Business Offices to Insure All Calls Being Answered.

fected, as is the case on the London Stock Exchange, where the 50 telephones are sprayed daily with a disinfectant under an agreement with the General Post Office."